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# Service and Maintenance

**Model: All**

**Production: All**

# OBJECTIVES

After completion of this module you will be able to:

- Know the requirements of the Quality Certification.
- Perform Oil Service and Inspection I and II as specified.
- Understand the Battery Maintenance Requirements.
- Locate BMW Service Bulletins

# Quality Certification I (QCI)

Every new vehicle which arrives at the BMW center requires that a Quality Certification (QCI) be performed. The QC I is performed in two parts.

- Display Vehicle Check
- Delivery Check

When performing a QC1, a checklist has to be completed. Refer to Centernet for latest forms (based on Model and Model Year).

The requirements for a vehicle's Quality Certification vary slightly by model. The checklist must be adhered to strictly.

Every item checked off signifies that it has been verified and in proper working condition. If an item is found defective an extra line has to be added on the repair order.

The QC1 checklist has two sections that should be checked off by a technician.

Page Size	Page Color	Operation
Half	blue	Display Vehicle Check performed by Technician. Perform when vehicle is being used for showroom display or demonstrator.
Full	White	Display Vehicle Check performed by technician.
		Delivery Check performed by Technician.
		Delivery Check performed by BMW Client Advisor.
		Perform when vehicle is being prepared for customer sale.

## Display Vehicle Check- BMW Technician

The Display Vehicle Check is performed if the vehicle is to be stored on the centers lot or in the showroom. The vehicle is inspected for shipping damage and any defects that may not have been caught at the VPC (Vehicle Preparation Center).

- Complete the upper portion of the checklist and the box labeled 00 00 008 Display Vehicle Check-Technician.
- Remove the top copy of the checklist and attach it to the repair order.

The remaining portion of the checklist should be left in the vehicle or put into the vehicle sales file.

**Note: The automobile inventory should be verified frequently, so there are no open recalls/campaigns. Recalls/campaigns should be performed prior to the TECHNICIAN DELIVERY CHECKLIST to avoid any delays during delivery, including spot deliveries.**

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## Delivery Check- BMW Technician

The Delivery Check is performed no more than 24 hours prior to the customer taking delivery of the vehicle. The purpose of the Delivery check is to ensure that no damage or system problems have appeared since the vehicle was first checked at arrival to the center. The BMW center must deliver a vehicle to the customer free of any defects at time of delivery, this is difficult to ensure if the vehicle has not been inspected for several days or weeks.

Vehicles that are sold before arrival to the center or to be put into service as Loaner Cars may have both parts of the QC I performed together, this is referred to as a Spot Delivery. In this case the vehicle will not be sitting on the lot more than 24 hours before delivery.

Always refer to the latest Service Information for special instructions and warranty information that is necessary to properly perform a QC I.

**Notes:** \_\_\_\_\_

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## Transportation Mode

Transport Mode minimizes battery current draw while vehicles are in transit to BMW centers.

Transport Mode replaces the more traditional battery switch. Transport Mode has been phased in on all BMW models starting from the E39 (5 Series).

Transport Mode immobilizes vehicle convenience features. Actual features immobilized vary between vehicle models, but typically include radio operation, interior lights, etc.

Transport Mode must be deactivated at QC1.

**Note: Once deactivated, Transport Mode cannot be reactivated**

### Deactivating Transport Mode

To deactivate Transport Mode, connect the vehicle to the DISPlus or GT1. Connect an approved BMW battery charger.

For E65 only , select "Diagnosis", then select "Function Selection / Service Functions / Maintenance / Transport Mode / Delete Transport Mode / Test Plan". Then follow the on-screen instructions to deactivate Transport Mode.

For all other BMW models , select "Diagnosis", then select "Function Selection / Service Functions / Body / Transport Mode / Delete Transport Mode / Test Plan". Then follow the on-screen instructions to deactivate Transport Mode.

# Vehicle and Key Memory

This feature provides the flexibility of allowing the owner to customize certain functions of select vehicle systems and automatically identifies users of the vehicle by a key identification signal provided by the remote keyless entry system (FZV). VKM coding is done at the time of delivery during the QC I.

Vehicle & Key memory is marketed as a combined feature but is actually two separate functions of the select vehicle control systems.

## Vehicle Memory

The owner is provided with a list of available system functions that can be customized to their liking. Prior to delivery, CIP is used to encode the owner's chosen selections into the appropriate control modules.

## Key Memory

This feature provides the added convenience of identifying users of the vehicle whenever a lock or unlocked signal is generated via the individual FZV keys. A maximum of four FZV keys can be used with the Key Memory feature.

Each of the four keys generate a unique key identification signal (key number) that is transmitted simultaneously with the lock/unlock signals to the General Module. Key Memory does not respond to Lock/Unlock requests from the mechanical drivers door lock.

Most of the key memory functions require the vehicle be configured using the "KEY MEMORY" function of the DISplus or GT1. However, there are a few features that store settings automatically without configuration such as IHKA blower speed and temp setting.

There are features that function as both a Vehicle & Key Memory feature.

Example: The Automatic Seat Adjustment feature is encoded as a Vehicle Memory Function with the following possibilities:

- when unlocking,
- when opening a door after unlocking
- or not active at all.

If active, the seat positions are stored and reactivated by the Key Memory function for individual users of the car.



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## **Service**

### **Required Preconditions**

Before configuring Vehicle or Key Memory Functions, connect a battery charger to the vehicle. This will ensure adequate battery voltage during the VKM configuration.

If battery voltage drops below 11.8 volts, the procedure will terminate.

### **Vehicle Memory Configuration Procedure**

Please refer to Progman section located under the Workshop Applications tab of this book.

### **Vehicle/Key Memory Service Considerations**

If a Vehicle/Key Memory capable control module becomes defective and needs replacement, the specific customized data will be transferred over to the new replacement unit during the encoding process.

If this is not possible due to extensive control module failure, the owner must be made aware of the situation and requested to provide the options they originally selected. For this reason, it is advantageous to print the selected features as mentioned in the Vehicle & Key Memory configuration procedures.

### **FZV Key Initialization Procedure**

Also mentioned in the BMW Features section of this manual, If FZV keys need re-initializing, make sure they are initialized in the same order.

### **Technician Awareness**

Vehicle Memory/Key Memory Configuration changes the functionality of the systems. It is recommended that the Vehicle/Key memory selections be reviewed for the vehicle you are working on. There may be an owner selected function activated that is not a common selection, causing misunderstanding of the system's function.

# Service Maintenance Programs

There are two different types of service maintenance requirement used in BMW vehicles depending on the model and production date. The two maintenance programs are:

- Scheduled Maintenance
- Condition Based Service

Early BMW vehicles are dependent on a scheduled service maintenance program. This means that when a certain criteria is met, usually an oil change, the vehicle will have to undergo either an extensive oil service or a major inspection.

Starting with the E65 (7 Series) the BMW service program utilized is condition based. Condition Based Service (CBS) allows for the servicing of specific vehicle components only when it needs the actual service.

## Scheduled Maintenance

A Service Maintenance Checklist has been developed for early BMW passenger cars that require scheduled maintenances. The checklist incorporates space to record values called for in specific checking operations.

These include disc brake pad thickness, tire pressures, and the freeze point temperatures of the engine coolant and of the windshield washer fluid.

Because the vehicle will be visiting the workshop less frequently it is very important that the maintenance and any time dependent services be carried out thoroughly and correctly. Follow the Service Maintenance Checklist for the necessary steps required to properly complete the service.

## Engine Oil Service

Starting with the introduction of the 1999 3 Series (E46), BMW introduced an extended oil change interval of approximately 15,000 miles depending on engine operating conditions. The engine oil change interval of approximately 15,000 miles was carried over to all 2001 BMW models. (Before this the interval was approximately 7,500 calculated miles).

However, engine oil should be changed at least once a year. This revision (annual oil change) is retroactive to earlier model years and is included in the BMW Maintenance Plan. To coincide with the increased oil change interval, BMW also introduced "BMW High Performance Synthetic Oil" SAE 5W-30.

BMW recommends the use of BMW High Performance Synthetic Oil SAE 5W-30 or Castrol RS SAE 10W-60 Synthetic.

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## **BMW Inspection I**

The next scheduled maintenance procedure performed after an oil service is an Inspection I.

The advanced technologies used in engine management systems and improvements in low maintenance engine design have reduced the required maintenance in each inspection service significantly.

## **BMW Inspection 2**

The BMW Inspection 2 includes all of the procedures outlined in the Inspection I, but includes additional steps that are only necessary with higher accumulated miles.

## **Condition Based Service**

Starting with the introduction of the E65, the CBS program does away with the scheduled maintenance program that requires the replacement of components that might not need immediate replacement.

Condition Based Service monitors wear and tear on important parts. Its sensors can determine when a component needs to be replaced or upgraded. Even if the degree of wear cannot be gauged directly, such as in the case of the air conditioning microfilter, the system uses algorithms to determine when a service check-up should be performed. 'Made-to-Measure Maintenance'

Several parameters provide the information for this system - mileage, temperature, driving style and more. Overall, Condition Based Service maximizes safety and keeps the vehicle on the road longer, as the car is serviced only when it is necessary. You get the most out of your automobile, and are always well informed.

- Notes:**
- **For the most recent list of approved motor oils and their engine application refer to bulletin SI B11 08 98.**
  - **Intervals for services may vary slightly especially if it is a Motorsport model.**
  - **Always complete the appropriate maintenance checklist when performing a scheduled maintenance.**

# Sample 2005 BMW Service Maintenance Checklist

## BMW of North America, LLC 2005 3 Series, Z4 (X3 and X5 - use 2004 checklist SD92-260) Service Maintenance Checklist

Only operations that pertain to this vehicle will be performed.

NOTE: Any other requested repairs not listed or covered by the applicable BMW Limited Warranty will be charged to the owner and invoiced separately.

Customer's Name	
Chassis Number	Indicate # Lights illuminated in Service Interval Indicator G G G G Y R
BMW center	Mileage (on Service Interval Ind.)
Repair Order No.	Mileage (on odometer)

State and federal statutes require a properly completed copy of this form to be retained in the BMW center's customer file.

TECHNICIAN'S SIGNATURE		Z4 (Z4, 3.0i) (rougher)	325i (325i)	M3	✓
		E85	E46		
<b>BMW Oxygen Sensor Replacement</b> , required at intervals of 120,000 mi. (325i SULEV: 150,000 mi. M3: 100,000 mi.)		●	●	●	
<b>BMW Spark Plug Replacement</b> , required at intervals of _____000 mi.		100	100	60	
<b>BMW Automatic Transmission Service</b> ; change ATF at intervals of 100,000 mi.		●	●		
<b>1200 Mile Service</b>					
Read out diagnostic system.				●	
Change oil and oil filter while engine is at operating temperature. Use only Castrol TWS Motorsport SAE 10W-60 Synthetic oil, or Castrol Formula RS 10W-60 Synthetic oil, BMW p/n 07 51 0 009 420				●	
Replace transmission fluid.				●	
Replace differential oil.				●	
Check all warning/indicator lights, check control.				●	
Road test with check of brakes, suspension, shock absorbers (external), steering, clutch/manual transmission.				●	
<b>BMW Engine Oil Service</b>					
Change oil and oil filter while engine is at operating temperature. We recommend BMW High Performance 5W-30 Synthetic oil, p/n 07 51 0 017 866		●	●		
Change oil and oil filter while engine is at operating temperature. Use only Castrol TWS Motorsport SAE 10W-60 Synthetic oil, or Castrol Formula RS 10W-60 Synthetic oil, BMW p/n 07 51 0 009 420				●	
Replace microfilters. <b>Note:</b> reduce replacement interval in dusty operating conditions.		●	●	●	
Check overall thickness of front and rear disc brake pads using special tool. Record results. If replacement is necessary*: Examine brake disc surfaces. Clean brake pad contact points in calipers. Grease wheel centering hubs. Check thickness of parking brake linings only when replacing rear pads. Record results.		●	●	●	
Check parking brake actuation. Adjust if necessary.		●	●	●	
Lubricate convertible top hinge covers.			●	●	
Reset Service Indicator. <b>Note:</b> Do not reset Service Indicator when additional oil changes (between the normal intervals) are requested by the customer.		●	●	●	
<b>BMW Inspection I: Undercarriage</b>					
Change oil and oil filter while engine is at operating temperature. We recommend BMW High Performance 5W-30 Synthetic oil, p/n 07 51 0 017 866		●	●		
Change oil and oil filter while engine is at operating temperature. Use Castrol TWS Motorsport SAE 10W-60 Synthetic oil, or Castrol Formula RS 10W-60 Synthetic oil, BMW p/n 07 51 0 009 420				●	
Check transmission for leaks.		●	●	●	
Check rear axle for leaks.		●	●	●	
Half shafts: Check for leaks at flexible boots.		●	●	●	
Visually check fuel tank, lines and connections for leaks.		●	●	●	
Check condition, position, and mounting of exhaust system. Examine for leaks.		●	●	●	
Check power steering system for leaks. Check p/s fluid level; add fluid if necessary.			●	●	
Check overall thickness of front and rear disc brake pads using special tool. Record results. If replacement is necessary*: Examine brake disc surfaces. Clean brake pad contact points in calipers. Grease wheel centering hubs. Check thickness of parking brake linings only when replacing rear pads. Record results.		●	●	●	
Check brake (and clutch) system connections and lines for leaks, damage, and incorrect positioning.		●	●	●	
Check steering for absence of play, condition of suspension track rods, front axle joints, steering linkage and joint disc.		●	●	●	
Check parking brake actuation. Adjust if necessary.		●	●	●	
Check all tire pressures (including spare). Correct if necessary. Record results. Check condition of tires (outer surfaces [left/right]), tread wear and pattern; in case of uneven tread wear readjust wheels alignment if requested.* <b>Note:</b> If requested, rotate all four roads wheels as instructed and rebalance.*		●	●	●	
Replace M-Mobility System sealant cartridge every 4 years.				●	

# Sample 2005 BMW Service Maintenance Checklist (cont.)

		Z4, Z4i, 9.0i (roadster)	335i, 330i	M3	✓
Washer Fluid:	<b>BMW Inspection I (cont'd)</b>	E85	E46		
	Inspect entire body according to terms of rust perforation limited warranty (must be performed at least every two years).	•	•	•	
Freeze Point Temperature (°F): Coolant	<b>BMW Inspection I: Engine Compartment</b>				
	Read out diagnostic system.	•	•	•	
	Check and adjust valves.			•	
	Check engine cooling system/heater hose connections for leaks.	•	•	•	
	Check coolant level and antifreeze protection level; add coolant if necessary.	•	•	•	
	Check level of brake and clutch fluid in reservoir. Add fluid if required.	•	•	•	
	Replace brake fluid every 2 years (time interval begins from vehicle's production date).*	•	•	•	
	Check windshield washer fluid level and antifreeze protection.	•	•	•	
	Fill up and/or correct if necessary. Record freeze point temperature.	•	•	•	
	Check air conditioner operation.	•	•	•	
	Replace microfilters.	•	•	•	
	<b>Note:</b> reduce replacement interval in dusty operating conditions.				
	Reset Service Indicator.	•	•	•	
	<b>BMW Inspection I: Body/Electrical Equipment</b>				
	Check battery state-of-charge, and charge if required.*	•	•	•	
Check lighting system, i.e., headlights, foglights, parking, back-up, license plate, interior (including map reading lights), glove box, flashlight, illuminated make-up mirrors, luggage compartment lights.	•	•	•		
Check instrument panel and dashboard illumination.	•	•	•		
Check all warning/indicator lights, check control.	•	•	•		
Check turn signals, hazard warning flashers, brake lights, horns, headlight dimmer/flasher switch.	•	•	•		
Check wipers and washer system(s); wiper blades, washer jet positions.	•	•	•		
Check condition and function of safety belts.	•	•	•		
RR	Recharge or replace batteries for remote controls in all vehicle master keys.	•	•	•	
	Check central locking/double lock.	•	•	•	
	Check operation of all latches.	•	•	•	
	Check heater/air conditioner blower fan, rear window defogger.	•	•	•	
RF	Check rear view mirrors.	•	•	•	
	Visually examine the SRS airbag units for torn covers, obvious damage or attachment of decals, decorations or accessories.	•	•	•	
	Activate automatic roll-over protection system (if equipped) via diagnostic link. <b>Note:</b> First remove hardtop/lower top.		•	•	
	Lubricate convertible top hinge covers.		•	•	
	<b>Final Inspection</b>				
LR	Road test with check of brakes, suspension, steering, clutch/manual transmission or automatic transmission, shock absorbers (external).	•	•	•	
	<b>BMW Inspection II: Includes all items listed under Inspection I, and the following checks and maintenance items:</b>				
	<b>Engine Compartment</b>				
	Replace intake air cleaner element. <b>Note:</b> Reduce replacement interval in dusty operating conditions.	•	•	•	
	Replace spark plugs.			•	
	<b>Undercarriage</b>				
LF	Replace transmission fluid.			•	
Disk Brake Pad Thickness (mm):	Replace differential oil.			•	

\*Invoice separately

Parking Brake Lining Thickness (mm):

# Service Interval Indicator System

The Service Interval Indicator System is designed to alert the driver when the vehicle is due for service. Recent advances in the materials used in engine construction along with low emission engine management systems and the use of high performance synthetic oils have increased distance between services to approximately 15,000 miles.

The Service Interval Indicator System helps to reduce the confusion and inconvenience of computing maintenance intervals based only on mileage. Rather, the intervals are based on the owners specific driving style.

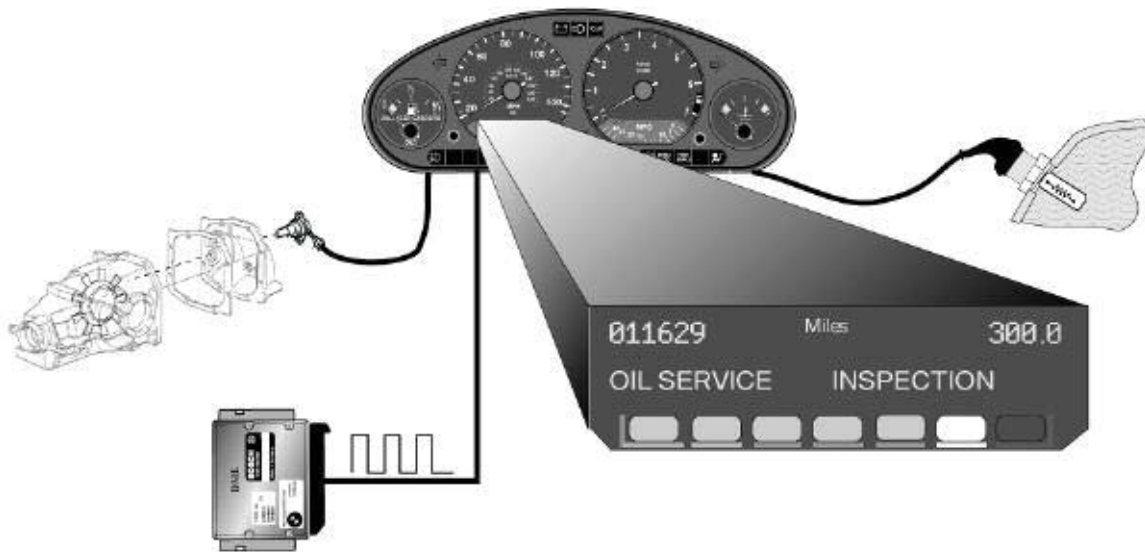
When the SIA determines the time for a service that is necessary, it displays the service (Oil Service or Inspection) in the instrument cluster and remains displayed until the system is reset and a countdown for the next service is started.

## SIA II

Models: All

Production: 1986 up to 1996

(E36 and E36/7 up to 1999)



## SIA II Components

- Instrument Cluster with LCD display
- DME
- Vehicle Speed Input
- Engine Temperature Sensor

## ■ Instrument Cluster with LED Display

The Instrument Cluster is responsible for calculating the Service Interval and displaying the LED blocks used to represent time until next service.

## ■ DME

The DME control module provides the engine speed signal used in the SIA calculation.

## ■ Vehicle Speed Input

The vehicle speed input is provided directly by a reed switch in the differential (E32,E34,E31,E36), or from a processed signal sent by the Braking and Traction (ABS/ASC) control module (E38).

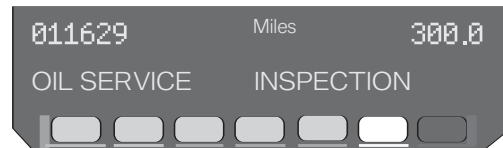
## ■ Engine Temperature Sensor

The engine temperature NTC sensor provides the engine temperature signal used in the SIA calculation.

## Principle of Operation

The Service Interval Indicator consists of a row of LEDs and two text messages displaying:

“OIL SERVICE” or “INSPECTION”. The LED’s show the length of time remaining until an Oil service or Inspection is due. The SIA II display uses 5 green LEDs, one yellow and one red LED.



The Display LEDs are only illuminated when the ignition is first switched on. The display remains for approximately eight seconds before being switched off. The countdown to a service on a new or recently serviced vehicle starts out with all green LEDs illuminated. Over a period of time and mileage, the green LEDs will be turned off one by one. When a service is due, all green LEDs will be out and the yellow LED will be illuminated along with the text message “OIL SERVICE” or “INSPECTION”.

If the service is not performed the red LED will illuminate after an additional 1000 miles has accumulated.

The calculation that the instrument cluster or IKE(E38) uses to calculate service interval is based on three pieces of data:

- Engine Speed (RPM)
- Distance Traveled (miles accumulated)
- Engine Temperature

The use of Engine Temperature and RPM for the calculation allow for a more precise estimation of when a service is required by taking driving styles into account. A vehicle for example, that is driven aggressively or for short distances in stop and go traffic may require servicing more often than a vehicle that is driven longer distances on freeways.

## Service

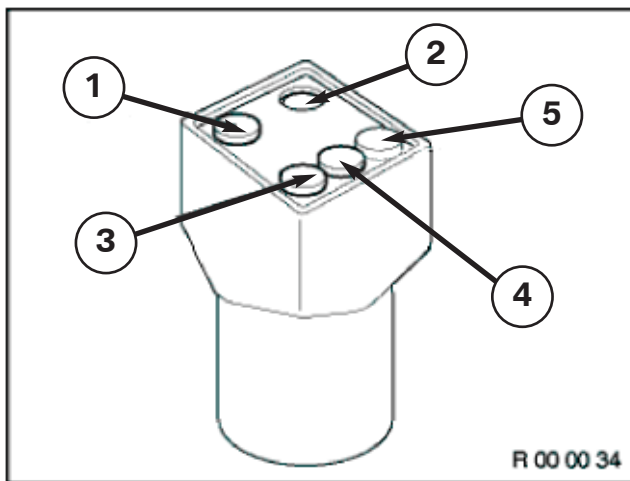
When a service is performed the Service Interval Indicator must be reset. For vehicles equipped with SIA II there is only one method:

- Reset using special tool

The SIA is reset using the SIA reset function, the tool creates a pulse width modulated signal on the DIASIARE lead (diagnosis-service-interval-reset-lead), pin 7 of the diagnostic connector.

### Reset Procedure using Special Tool

- Insert special tool 62 1 110 into the diagnostic connector. If the vehicle uses a 15 pin diagnosis connector use adapter 61 2 060.
- Turn the ignition to position 2
- Push and hold the the button to reset the applicable service: Oil Service or Inspection. Button 1 or 2 respectively.
- The reset tool has three LEDs below the reset buttons. The green LED(4) in the center comes on whenever any service reset is selected to indicate that communication is OK. The other two LEDs (3 and 5) indicate that the proper reset (Oil Service: yellow or Inspection: red) is being carried out.



Index	Explanation
1	Oil Service Reset button
2	Inspection Reset Button
3	Yellow LED for Oil service Reset
4	Green LED for communication acknowledgement
5	Red LED for Inspection Reset



## ■ Instrument Cluster Replacement

If the Instrument Cluster is replaced on early vehicles the SIA data is lost. Redundant data storage is available for the following models:

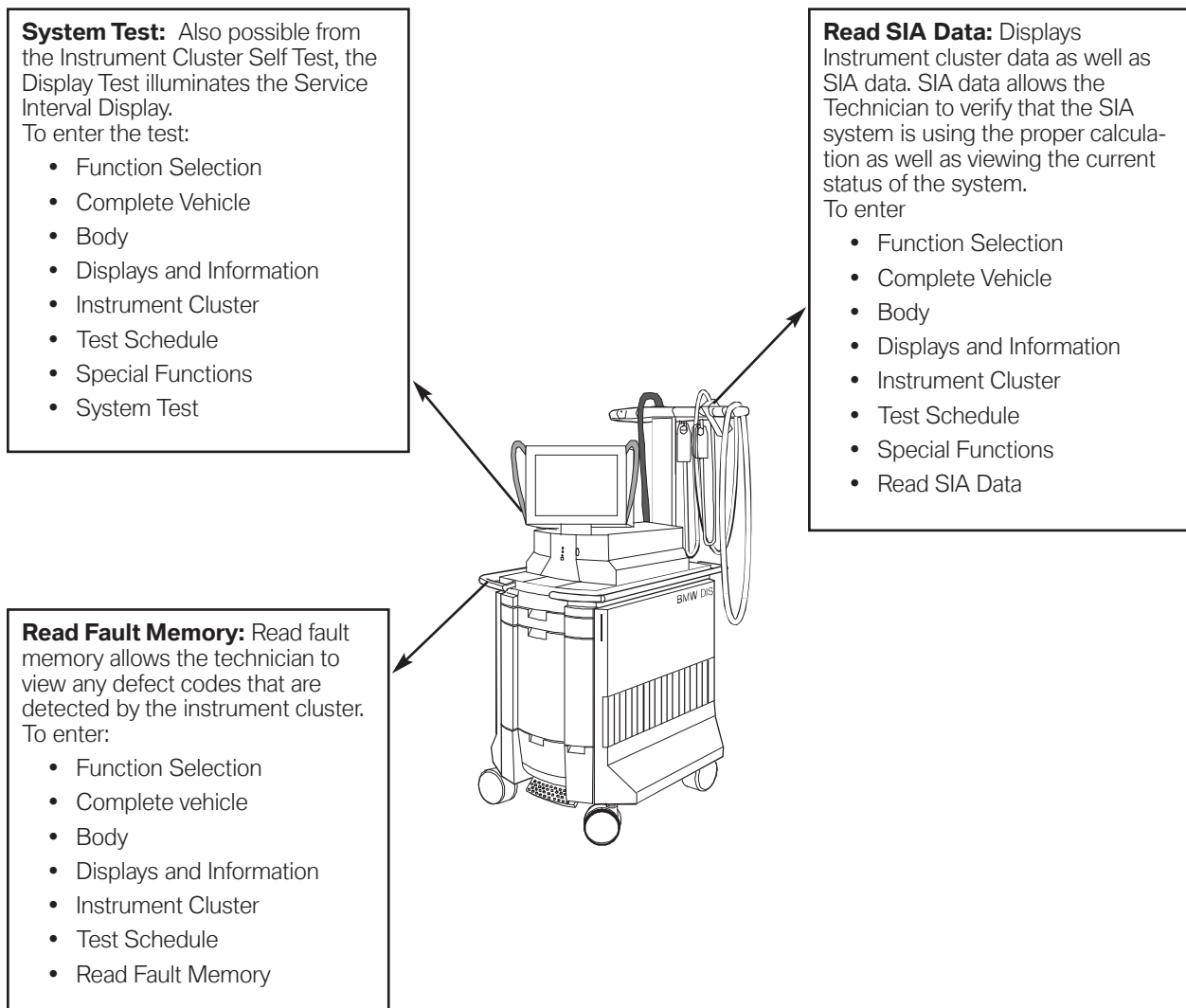
- E31-Data stored in EKM and LKM
- E38-Data stored in IKE and LCM
- E36-(1997-1999), E36/7- Data stored in cluster EPROM and Coding plug.

If a Cluster is replaced on a vehicle with redundant data storage, the transfer of the SIA data (along with total miles) is possible.

## ■ Diagnosis

Diagnosis using the Diagnosis program is possible on vehicles whose clusters are on the diagnostic link: E32, E34, E36 (except E36/5, /7 up to 9/98) and E38.

The tools available to diagnose the SIA system in the Diagnosis Program are:



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## SIA III

Models: E38, E39, E53, E36/5, E36/7

Production: 1996 onward excluding E36  
(except E36/5 and E36/7 from 9/98)



### SIA III Components:

- Instrument Cluster with LED display
- DME

#### ■ Instrument Cluster (IKE, KOMBI) with LED Display

The Instrument cluster calculates the Service Interval. The cluster is also responsible for displaying the LED blocks used to represent time until next service.

#### ■ DME

The DME provides the Fuel Consumption signal (ti) as the only signal used in the SIA calculation.

### Principle of Operation

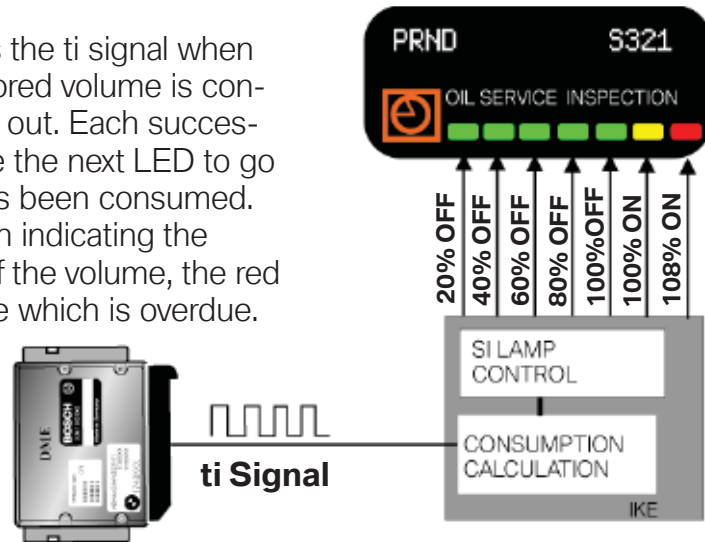
The sequence for displaying the necessary service is similar to SIA II. The calculation method however differs significantly.

The Instrument Cluster calculates the Service Interval based only on the input of the “ti” signal (Fuel consumed) from the DME. This method gives an accurate indication of engine load and the need for service.

The SIA data for the specific model is coded into the instrument cluster. The data consists of a Stored quantity of fuel, referred to as the “Coded Inspection Limit”. The “Coded Inspection Limit” varies according to model and can be viewed using the Diagnosis Program.

The processor of the Cluster receives the ti signal when the vehicle is used. As 20% of the stored volume is consumed one of the green LEDs will go out. Each successive 20% of fuel consumed will cause the next LED to go out until 100% of the stored value has been consumed. At this point the yellow LED comes on indicating the service that is necessary. At 108% of the volume, the red LED will illuminate indicating a service which is overdue.

When the Service Interval Indicator is reset, the total stored volume of fuel is restored in the cluster and the calculation starts over again.



## Service

### ■ Reset of the SIA III:

- Use the Reset Tool as explained in SIA II Workshop Hints (up to MY 2001).
- Use the Reset Mode in the Instrument Cluster (E39/E53 MY 2001 onwards).
- Use the Reset Test Module in Service Functions

Reset procedure using the Reset Mode:

- Ignition key must be “off”
- Press and hold the trip odometer reset button in the instrument cluster (left button), and turn the ignition key to the first position.
- Keep the button pressed for approximately 5 seconds until one of the following words appear in the display: “OIL SERVICE, or “INSPECTION”, with “Reset”.
- Release the reset button and press it again until “reset” begins to flash in the display.

The service due, is shown with “reset”, if the coded minimum consumption limit has been reached and resetting is possible. If “reset” is not shown, the minimum limit has not been reached and resetting is not possible.

- While “reset” is flashing, press the left button briefly to reset the service interval. After the display has shown the new interval, the following will appear: “END SIA”

The system can only be reset again after 10 liters (2.5gal) of fuel have been consumed.



### E39 Service Interval Reset (High Version)

#### ■ Instrument Cluster Replacement

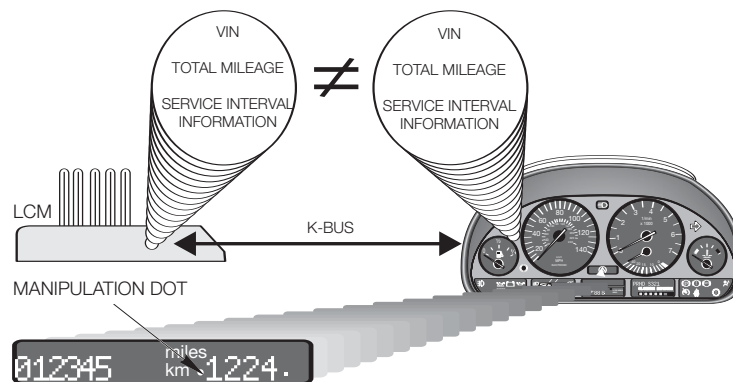
If the instrument cluster (IKE or Kombi) is replaced the SI data can be retrieved from the LCM on E38, E39, and E53 vehicles.

Replacement of the Kombi or IKE is only possible with a new component.

Leave the old cluster in the vehicle. Using the ZCS coding program, adopt the code from the old part.

Install the cluster and transfer the saved code to the new part. This procedure will ensure that the correct total miles and SIA data are transferred.

If the old part cannot be read, the LCM will provide a redundant location to allow the coding program to restore the total mileage and SIA data.



If the cluster is replaced in a vehicle equipped with a coding plug (E36/7 after 9/98) the procedure differs.

- Code the cluster using ZCS coding.

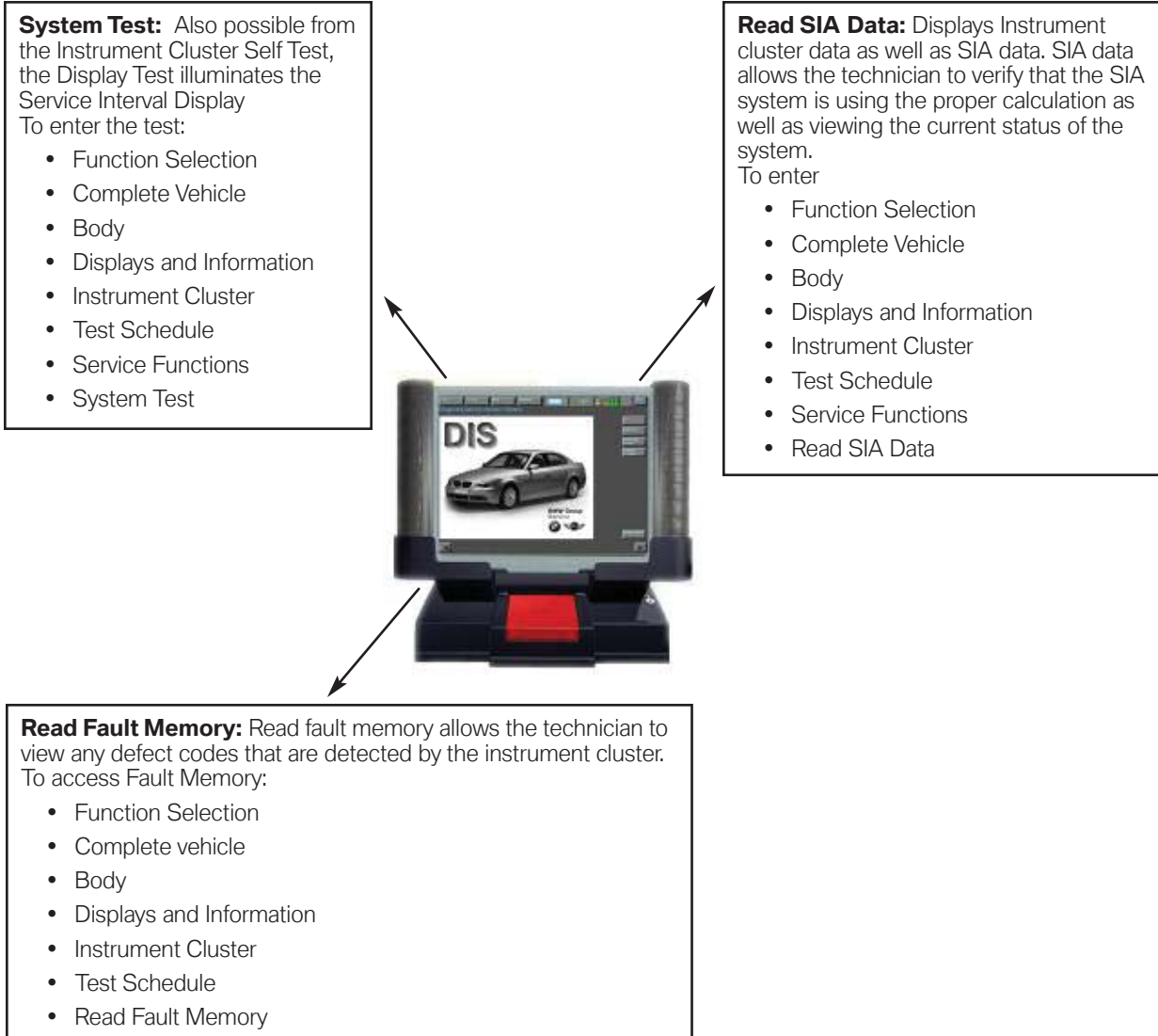
The cluster will display the correct mileage and SIA data except that the “Manipulation” dot will be illuminated.

- Use test step 16 to copy data from the coding plug. Refer to SIB 62 10 98 for complete instructions.

## ■ Diagnosis

Diagnosis of the SIA System is carried out using the Diagnosis program from the DISplus or GT-1.

The tools available to diagnose the SIA system in the diagnosis program are:



---

## ■ Read SIA Data

The SIA data coded into a vehicle (Coded Inspection Limit) can be printed and attached to the repair order.

This is required in cases when the instrument cluster indicates that maintenance is required, but the vehicle has lower than expected mileage.

In a small number of cases it may be that the instrument cluster was coded with the incorrect Coded Inspection Limit and will have to be re-coded.

The display of SIA data on the DISplus or GT1 also shows “Stored Consumption”. Stored Consumption (in gallons) is the amount of fuel consumed towards the “Coded Inspection Limit” (in gallons also). When the two numbers become equal, the instrument cluster indicates that service is required. When a reset is performed the Stored Consumption is reset to zero.

This feature is available in diagnosis for all vehicles using the SIA III method of calculating service intervals.

Refer to S.I 62 06 99 for a chart of Coded Inspection Limits for each vehicle model type.

<b>BMW DIS</b>
Diagnosis Report
Inspection code: Kom
SIA DATA
Series E38/E39/E53
Instrument cluster
Part number: 6 906 118
Hardware number: 12
Software number: 13
Chassis number: LH 03708
Total mileage: 1063 miles
SIA data:
Inspection limit coded: 918 gal
Stored consumption: 69 gal

### SIA Data Printout

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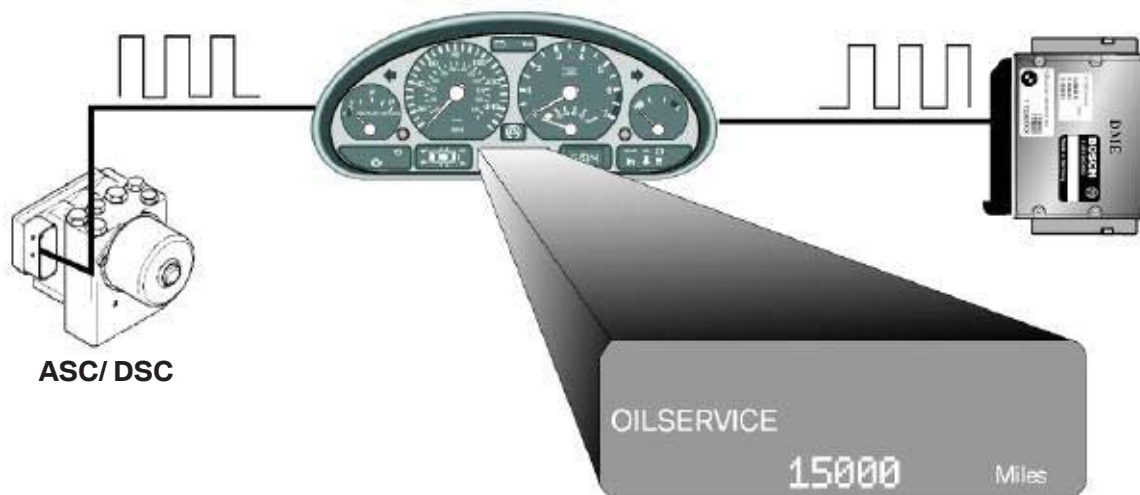
## SIA IV

Models: E46 and E52

Production: From start of production

### SIA IV Components:

- Instrument Cluster with LED display
- DME
- Vehicle Speed Signal



### E46 Service Interval Display

#### ■ Instrument Cluster (IKE, KOMBI) with LED Display

The Instrument cluster calculates the Service Interval. The cluster is also responsible for displaying the mileage reading for the next service.

#### ■ DME

The DME provides the Fuel Consumption (ti) signal.

#### ■ ASC/DSC Control Module

The vehicle speed signal is provided by the ASC or DSC control module.

---

## Principle of Operation

Starting with the E46 a new method for displaying the Service Interval is used. Colored LEDs are no longer used to display the amount of time until the next service or inspection is due.



With the SIA IV system, the actual mileage remaining until the next service will be displayed for five seconds when the ignition is first switched on.

The text "OIL SERVICE" or "INSPECTION" will also illuminate to show which service is due. A minus symbol( - ) before the mileage display indicates that a service is past due.

The calculation process for determining the service interval is similar to SIA III. A set volume is stored in the Cluster. The processor receives the ti signal from DME as the vehicle is driven. The Cluster also receives the vehicle speed signal from the ASC/DSC control module.

Based on the amount of fuel consumed and the distance traveled, the processor calculates the distance remaining to the next service.

## Service

Reset of the SIA can be done using special tool 62 1 110 if the vehicle is equipped with the 20 pin under-hood diagnosis connector.

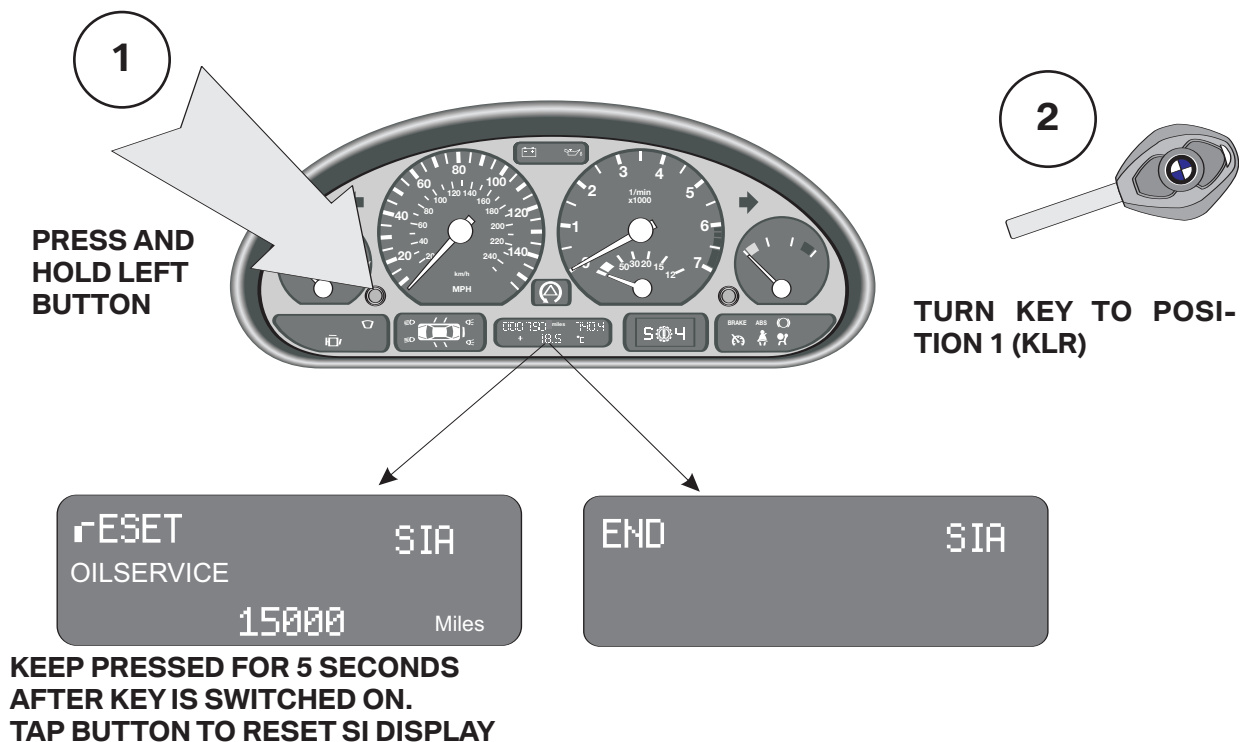
On 2001 MY vehicles onward without the diagnostic connector in the engine compartment, the use of the S.I reset tool is not possible. The Service Indicator may be reset using the Reset Mode in the Instrument Cluster or with Diagnosis.



■ **Reset Procedure using the Reset Mode**  
(possible from 9/99 onward for E46, MY2001 E52)

- Ignition key must be “off”.
- Press and hold the trip odometer button in the instrument cluster (left button), and turn the ignition key to the first position (KLR).
- Keep the button pressed for approximately 5 seconds until one of the following words appear in the display: “OIL SERVICE, or “INSPECTION”, with “reset”.
- Release the reset button and press and hold it again until “reset” begins to flash.
- While the display is flashing, press the left button briefly to reset the service interval. After the display has shown the new interval, the following will appear: “END SIA”.

The system can only be reset again after 10 liters (2.5gal) of fuel have been consumed.



**E46 Service Interval Reset**

## ■ Reset Procedure using Diagnosis Program

- Connect the Diagnosis head to the diagnostic connector of the vehicle.
- Identify the vehicle and perform the Short Test.
- Select Function Selection and then Service Functions.
- Highlight Reset Service Interval Indicator (Test module S6211-00001).
- Select with tester.
- Follow the directions from the help information in the test module (upper right corner).
- Select which service is to be reset and press the continue key.
- An acknowledgement is displayed on the screen that the reset has been carried out.

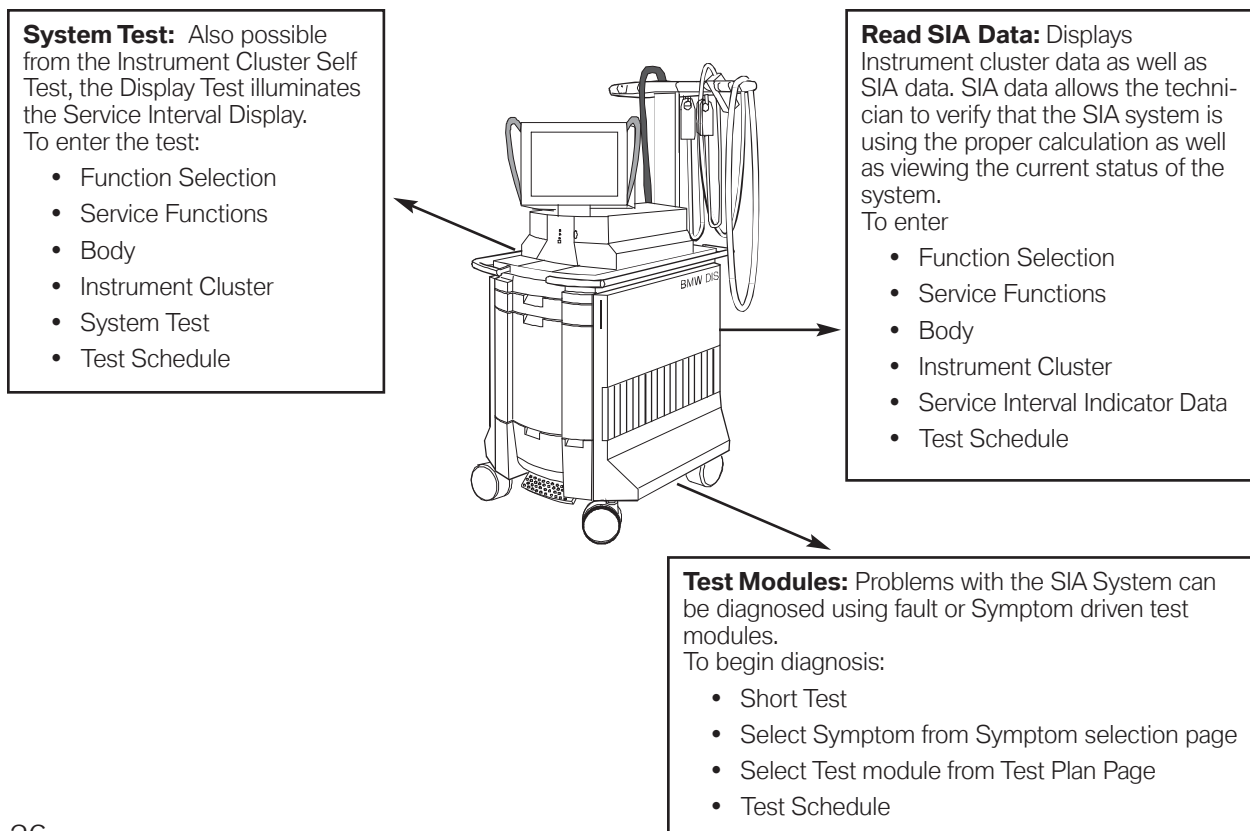
## ■ Instrument Cluster Replacement

If the instrument cluster (Kombi) is replaced the SI data can be retrieved from the LSZ on E46 vehicles and from the LCM III on the E52. Coding procedures are the same as SIA II.

## ■ Diagnosis

Diagnosis of the SIA System is carried out using the Diagnosis program of the DISplus or GT1.

The tools available to diagnose the SIA system in the diagnosis program are:



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## Connected Service

The term "Connected Service" refers to "Networked service." Modern vehicles are already heavily networked internally by the single bus systems. Communication of vehicle occupants with the vehicle occurs via several control and display systems like the instrument cluster, on-board monitor with navigation system and on the E65 with the central Control Display.

This networking in constant progress is also revolutionizing the service process. It is called "Connected Service" and allows increasing communication and networking between the vehicle and the Retail Service Departments.

Customers can expect the following from the BMW Service in the future:

- Exactly planned appointments, no loss of information, early problem detection and flexible service.
- Fast handling of the service process without long waiting times for the service advisor, spare parts or vehicle.
- Departure from fixed items of inspection/repair, same high service quality, personal and individual advice.

Connected Service offers new possibilities. Vehicle specific service requirements are automatically assessed. Fixed inspection/maintenance schedules will be replaced by more flexible maintenance services.

The existing process will be further optimized, the appointment process will be faster and more effective and service advisors will have more time for individual consultation.

Connected Service is made up of several modules some of which are already available or are introduced starting with the E65.

The modules are:

- Condition Based Service (CBS)
- Coded Keys
- Key Reader
- Service Acceptance Module Software (SAM)

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## Condition Based Service (CBS)

BS defines vehicle specific maintenance requirements by sensor based monitoring of engine oil, air conditioning micro-filters and the front and rear brake linings. In addition, time dependent monitoring of the engine oil, brake fluid and coolant.

CBS also provides distance dependent monitoring of spark plugs as well as visual and functional checks. The service need display (SBA) is located in the instrument cluster and the details are displayed in the Control Display.

## Coded Keys

The BMW keys have already been storing information for approximately 3 years. Since 1998 the chassis number and since 1999 the chassis number, mileage and status of the Service Interval Display (SIA) is stored.

The E65 keys (FBD keys or remote control service keys) store more information, such as check control messages and all CBS relevant data like: mileage, oil condition, brake pad wear and microfilter condition. The key is the “business card” of the vehicle.

## Key Reader

The Key Reader allows readout of the data stored in the key when the vehicle is checked in for service. The required basic data of the vehicle and the data concerning all service requirements are automatically available.

## Service Acceptance Module Software (SAM)

SAM is the software running at the service advisor’s work station. The software interprets and displays (processes) the vehicle data stored in the key.

SAM includes two future extension levels:

- **SAM 2** (Extension of SAM 1 - Future) Associated with TeleService 1, it allows the remote transmission of vehicle data stored in the keys and access to the central service databases (central repair history).
- **SAM 3** (Extension of SAM 2 - Future) Associated with TeleService 2, it allows the dealer to communicate with the vehicle for troubleshooting complex electronic problems.

## TeleService

TeleService will be offered at two levels:

TeleService 1 allows automatic or manual data transfer by cellular phone from the vehicle to a TeleService center. The Service Call transmits wear and fault information. Emergency service calls may be placed to an assistance service center. The transmission of information via SMS (Short Message Service) will allow collection of data from customers.

TeleService 2, will allow remote diagnosis of the vehicle electronics. Finally, Telediagnosis/programming will allow the removal of faults, encoding and flash programming select control modules via the telephone interface.



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## Condition Based Service (CBS)

Service Interval Indicator systems (SIA3 and SIA4) determine maintenance intervals based on fuel consumption, which is done to assess the need to change the engine oil. The main determining factor for the maintenance interval currently is the condition of the engine oil. Other maintenance needs, including the replacement of wear and tear items, are arranged to coincide with due engine oil changes.

BMW is now measuring the need for maintenance of several critical components besides the engine oil, and independently of the engine oil. This affords us the ability to bring a vehicle in for service whenever one of the measured components requires maintenance or replacement.

Condition Based Service (CBS - further development of SIA) will strike a compromise between too frequent maintenance and too rigid intervals which call for the replacement of maintenance items that may still have substantial useful life left. The objective is to furnish economical maintenance by providing the ideal service for individual vehicles.

### Principle of Operation

#### ■ Sensor Based (CBS) Schedules

The trend in the vehicle service business is to lengthen service intervals and reduce replacement of maintenance items. Additional measures have been taken to keep the vehicles in a roadworthy and comfortable condition.

Usage dependent maintenance of select wear and tear items is detected by physical and virtual sensors. This means that, in cases where the wear is not measured directly, the service due date will be determined by using auxiliary variables such as mileage, vehicle performance, temperature, etc.

Sensors built into certain components and control module algorithms take even more detailed account of the various conditions of vehicle use. The remaining times for selected maintenance tasks as well as any dates for State and/or Emissions Inspections (determined by the state in which the vehicle is registered) are individually displayed.

CBS determines the current and future maintenance requirements. The current status of Service items determined by CBS are shown in the Control Display. This data can also be read from the vehicle key by using the Key Reader, as the vehicle's current service status is automatically saved in the ignition key every time the key is used.

Three sensors detect the following wear conditions:

- Engine oil (sensor)
- Microfilter (virtual sensor)
- Front and rear brake linings (sensor as reference point)

The instrument cluster collects the values from the wear detection control modules and manages the internally defined service repair schedule. Data exchange is carried out on the bus systems.

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### ■ Engine Oil Condition

The condition of the engine oil is detected by the oil condition sensor. Simultaneously, it also detects the engine oil level and the oil temperature.

The engine oil condition sensor is monitored by the ECM and is mounted in the oil pan.

The ECM contains an algorithm for evaluating the service due date. The following parameters are considered in the calculation:

- The correct oil grade is installed
- Oil level
- Oil temperature
- Engine load
- Fuel consumption (ti signal)
- Mileage
- Date (time elapsed since last oil change)

The remaining life to the next service is forwarded from the ECM to the instrument cluster by a bus message when the ignition is switched "ON." When the "engine oil" service is due, it is shown in the instrument cluster or the Control Display.

### ■ Microfilter State of Wear

The air intake section of the air conditioning system includes a microfilter on the right and on the left. The Microfilter includes an additional active carbon filter.

The condition of the microfilter is detected by the IHKA control module. It does not include a physical sensor to measure the level of contamination in the microfilter.

The IHKA uses an algorithm to calculate this from the following parameters:

- Ambient air temperature
- Rain sensor signal
- Heating use
- Air recirculation settings
- Driving speed
- Fan speed
- Mileage
- Date (time elapsed since the last oil change)

The remaining life to the next service is forwarded by the IHKA control module to the instrument cluster by a bus message when the ignition is switched "ON." When the "microfilter" service due date occurs, it is shown in the instrument cluster or the Control Display.

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### ■ Front and Rear Brake Linings State of Wear

The brake lining state of wear on the front and rear axle is confirmed and detected by 2-stage brake lining wear sensors. These are located on the left front and right rear brake pads. The first stage (reference point for the calculation) of the wear indicator is activated when the thickness of the lining is 6 mm, and the second when it is down to 4 mm.

The brake lining wear sensors voltage signals are monitored by the DSC control module. The brake lining wear sensor operates in the first stage as on current models and a resistor was added for the second stage.

The algorithm is controlled by these two different voltages in the control module and determines the residual thickness of the brake lining. The residual wear of the brake lining is calculated from the following input parameters:

- Wheel speed
- Brake pressure
- Braking frequency
- Brake disc temperature
- Braking time
- Mileage (travel distance)

The residual wear of the brake lining on the front and rear axles is stored in the DSC control module when the ignition is switched "OFF" and is used as the starting value the next time the vehicle is started.

The residual distance to the next service is forwarded by the DSC control module to the instrument cluster by a bus message when the ignition is switched "ON." The "Front or Rear brake linings" service due date is displayed in the instrument cluster or the Control Display.

**Note: Simultaneous replacement of the instrument cluster and ECM must be avoided whenever possible , otherwise all current oil maintenance schedule data will be lost. The values will then have to be inserted manually in each control module.**



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### ■ Internal Calculation of CBS Service Items

For certain wear and tear items, sensors are not needed by the Condition Based Service. The wear items that are calculated and managed internally by the instrument cluster are:

- Brake fluid
- Visual and functional checks (vehicle check)
- Coolant
- Official State Safety and/or Emissions Inspections
- Spark plugs

The maintenance of these items is performed at fixed intervals. The residual wear or the remaining time to next service is calculated by the instrument cluster using the travel/time parameters of: mileage, current date and internal distance counter. When a service item is due, it is shown in the instrument cluster or the Control Display.

Battery down times (battery cut off by the distribution switch) also stop the trip distance counter which leads to longer time based service intervals. This will disrupt the CBS volumes for engine oil, microfilter, brake fluid and coolant.

To correct this, the internal counter status must be reset by the DISplus/GT1. The wear dependent items internally calculated by the instrument cluster are stored in the instrument cluster and in the CAS control module (redundancy).

**Note: The internal distance counter plays a particular role. Unlike the Time/Date, this counter cannot be set by the driver.**

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## Service Indications

Regarding CBS, there are different service indicators:

- Service need display (SBA) in the cluster (base of speedometer) E65 only
- Check Control display in the instrument cluster
- CBS indicator in the Control Display

### ■ Service Need Display (SBA)

The Service Need Display is the evolution of the SIA4 Service Interval display. When KL15 is "ON," the Service Need Display appears under the speedometer in the instrument cluster for 10 seconds in the place where the fuel tank level is normally displayed.



The first line corresponds to the mileage dependent service items. It specifies the mileage when the next service is due. If the mileage is exceeded (service overdue), it appears with a minus sign.

The second line corresponds to the time dependent service items and is displayed by a clock symbol. It specifies the weeks/months/years when the next service is due. If the service is overdue, it appears with a minus sign.

The actual service item (with additional information) can be viewed in the Control Display.

### ■ Check Control Message

The CBS produces a Check Control message that indicates a service is needed.

The icon in the picture to the left is taken from an E65 instrument cluster that has a brake lining wear at the front or rear axle.



A brief Check Control message appears: "Service, see Vehicle menu." For more detailed information, the user can access the Control Display.

**Note: For vehicles without a Central Information Display (such as an E90 without NAV) the customer only receives an icon as a warning that a particular service is due. The owner's manual should be referenced to look up the icon.**

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### ■ CBS Indicator in the Control Display

The Control Display provides additional information on service and maintenance procedures by selecting:

- “OB data” menu. for E65
- “Settings menu => Service menu” for others models

The CBS menu appears with the service items.

The Control Display shows a list of selected service and maintenance procedures, as well as legally-mandated official inspections.

The service and maintenance procedures are displayed in different colors:

- Green: No service is currently required
- Yellow: Service deadline is approaching
- Red: Service deadline has already passed

The service items highlighted in red with the highest priority appear in the bottom part of the display.

You can scroll through the list of service and maintenance procedures from top to bottom by turning the Controller from right to left. You can leave the list of service items by pressing the button with the Up arrow symbol.

The service and maintenance items are:

- Engine oil
- Microfilter
- Spark plugs
- Emissions Inspection
- Front brake pads
- Brake fluid
- Vehicle check
- Rear brake pads
- Coolant
- State Inspection

To display the service and maintenance item information in the Control Display, turn the Controller to select the item and confirm your selection by pressing the Controller.

## CBS Reset

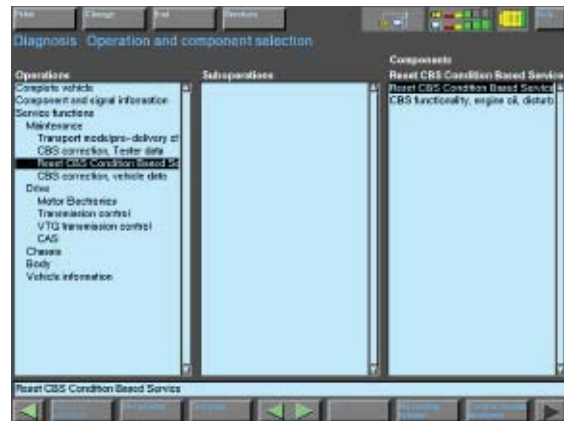
The CBS Reset procedure provides resetting of the individual Condition Based Service items. The items that require a reset depend on the individual vehicle usage. When one or more service and maintenance items has been performed, these items must be reset. The reset procedure can be carried out via the instrument cluster or the DISplus/GT1.

### DISPlus/GT1

Using the DISplus/GT1, the CBS Reset sets the service and maintenance items to 100% (full service interval) and displays a service counter to indicate how many times these items have been reset.

The procedure is found under:  
Service Functions => Maintenance => CBS reset.

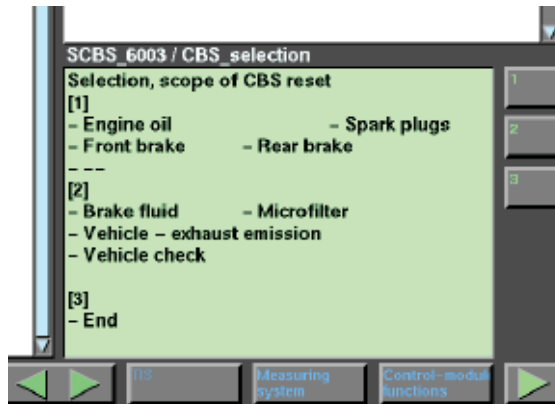
Select the CBS Reset => Test Plan => CBS reset => Right arrow



Select the specific item that needs to be reset.

The selection list is divided in two parts:

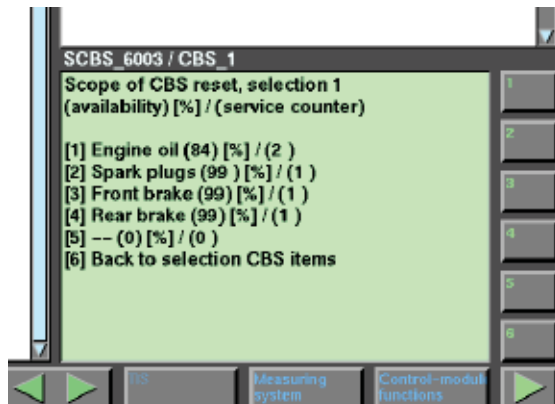
- |          |   |
|----------|---|
| Group 1: | Engine oil<br>Spark plugs<br>Front/Rear brakes                            |
| Group 2: | Brake fluid<br>Microfilter<br>Vehicle - exhaust emission<br>Vehicle check |



With the Group 1 option chosen, the items are displayed for further selection.

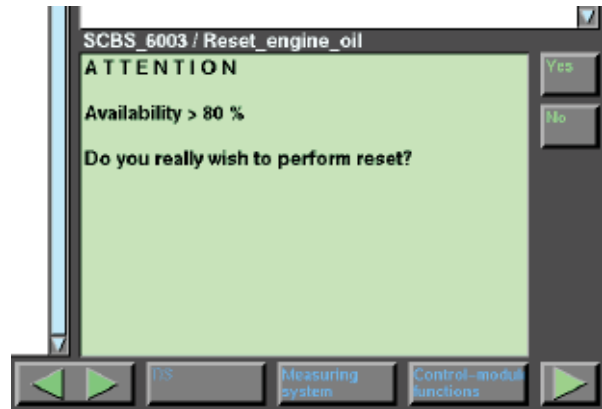
The selections are displayed with the remaining period left until the rest should be performed.

In this example, the engine oil has only achieved 16% of its scheduled usage; 84% of its "life" remaining.



After the specific maintenance item to be reset is selected from the options, a warning will be displayed and prompt you if the reset is really the intended action to be performed.

Select: "Yes" to reset  
 "No" to cancel and back out



### ■ Instrument Cluster

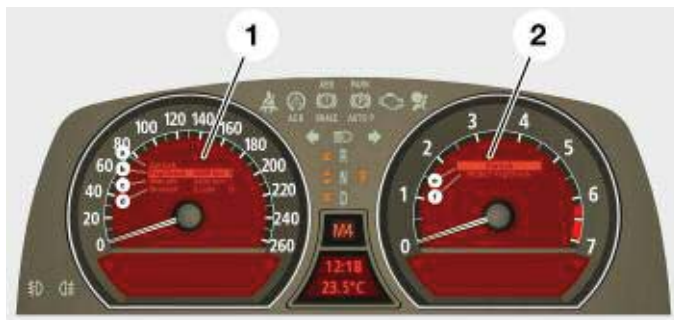
Resetting the maintenance item using the instrument cluster is different depending on the model of the vehicle.

### E65

To reset a service item using the instrument cluster, press the reset button on the top left side of the instrument cluster for greater than 10 seconds.

A 4-line menu appears in the speedometer. At the top is the Back function, then the first three service and maintenance items sorted by priority. In addition, the residual wear or the remaining time are specified (possibly with a minus sign).

The "!" symbol means that you can reset this service and maintenance item, while a "0" indicates it is not able to be reset (the first 20% of the service interval is protected against premature/accidental reset).



1. Service items (in the speedometer)
2. Resettable service item (in the tachometer)
  - a. Back
  - b. Vehicle Check
  - c. Microfilter
  - d. Brake fluid
  - e. Back
  - f. RESET Vehicle Check

You can scroll through the service and maintenance items by pressing the reset button or the lower axial (FAS) button on the turn signal/high beam switch. When you have selected a service item, press the reset button for a few seconds to display a 2-line menu in the tachometer.

The Back function is at the top and the Resettable service and maintenance item is below it. Now select the service and maintenance item with the reset button (or the axial button) and press the reset button again for a few seconds.

In a third menu line, the system confirms that the reset was successful. The whole interval for the service operation is highlighted in the Service Need Display.

## E60/61/63/64

When one or more operations have been carried out, e.g. front pads have been changed, these operations must be reset to their full service interval.

There are two options for resetting the service operations:

- Legally required service operations Legally required service operations such as the Statutory vehicle inspection (HU) and the Statutory exhaust test (AU), can only be reset in the "Service" menu.
- Maintenance service operations All service operations for the purpose of maintenance are reset by means of the reset button of the trip distance counter in the instrument cluster. If the reset button is pressed for longer than ten seconds, the reset mode opens automatically. "Reset?" is displayed in the lower display window.

In the upper display window, the CBS symbol , e.g. for "engine oil service overdue" will be displayed. Press the reset button until the time/distance-dependent displays in the lower display window are replaced with dashes. Reset is no longer possible once more than percent of the interval has expired. A reset lock will be shown in the display with "OK".



1. Reset button for trip counter
2. Upper Display Window  
- CBS Symbol
3. Lower Display Window  
- Gear Indicator  
- Reset Mode

## E90/91

To reset the service information data using the cluster:

- KL-15 on and all Variable displays in cluster off (clock should be displayed)
- Press and hold odometer reset button until CBS pictures display in cluster for about 5 seconds then release
- Use the BC button to scroll through till desired resetable picture is displayed.
- "Reset?" is displayed, Press and hold BC button a picture of a small analog clock runs through its display. When complete, the CBS reset that you chose is reset.
- If you want to insure that the reset was done, you can press the BC button while still looking at the CBS reset pictogram and the acknowledgment of reset will be shown with a check mark in a box.

## CBS Data Correction

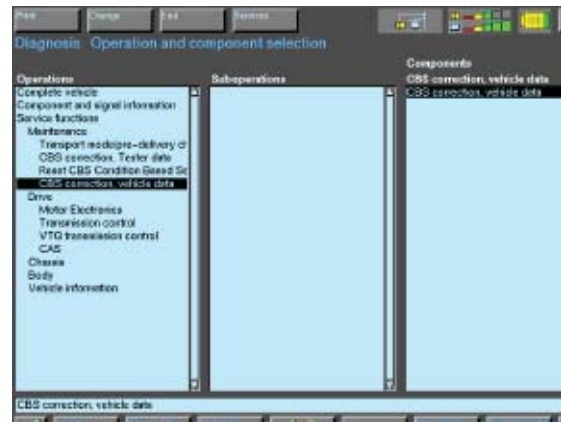
The CBS correction vehicle data allows “quick access” to create or change the CBS data stored in the vehicle. Sometimes the vehicle’s maintenance data will not be plausible (usually due to coding/programming issues). The correction includes decreasing the use percentage and number of resets when a reset was mistakenly performed. When the CBS reset is carried out, the changed data in the tester is automatically transferred to the vehicle.

**Example:** *A vehicle with only 3,000 miles on the odometer enters the service drive with the oil service light illuminated. The vehicle obviously does not need an oil service until **roughly** 15,000 miles.*

*The oil service should not be performed and the service maintenance light should not be reset either. This would make the vehicle undergo a **roughly** 18,000 mile service interval. Instead, the CBS data has to be manipulated or corrected to compensate for the miles already driven.*

The procedure for CBS correction is found via:

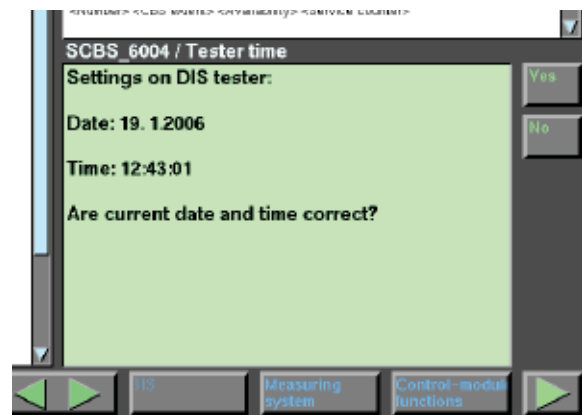
Service Functions => Maintenance =>  
CBS correction, Vehicle data.



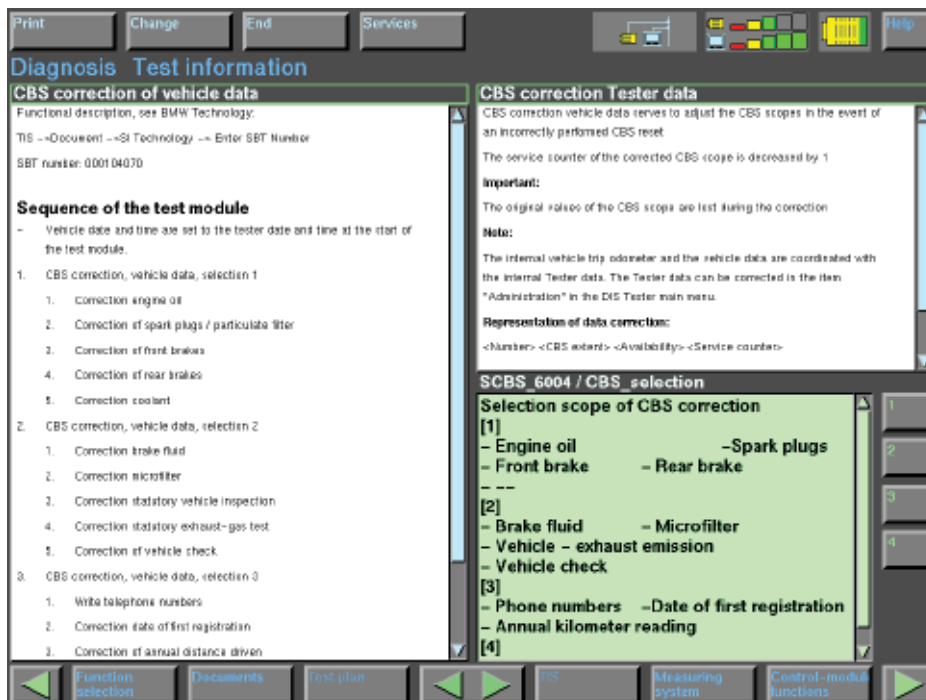
The first step is vital to synchronize the correct time and date from the DISplus/GT1 with the vehicle.

This is important for time/distance based service items that are managed by the instrument cluster.

After accepting by pressing <Yes> or <No> and entering corrections to the date and time, select the <Green Arrow> to the right.



**Note:** If this is found to be incorrect, go back to the Administration page of DISplus/GT1 (main menu) and reset the current date and time.



This screen displays the following service and maintenance items by groups:

1. CBS reset selection for:
  - Engine oil
  - Spark plugs
  - Front brakes
  - Rear brakes
  - Coolant
2. CBS reset selection for:
  - Brake fluid
  - Microfilter
  - Vehicle State Inspection
  - Emission Inspection
  - Vehicle check
3. CBS reset selection for:
  - Write telephone numbers
  - Correction data of first registration
  - Correction of annual distance driven (average used for CBS3)
4. End

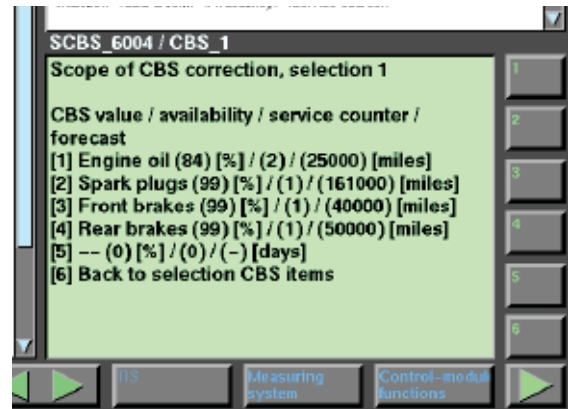
Usage dependent wear and tear items are monitored by physical and virtual sensors. In cases where the wear is not measured directly, the service due date will be determined by using auxiliary variables such as mileage, vehicle performance, temperature, etc.

Certain wear and tear items are calculated and managed internally by the instrument cluster (time and mileage) for Condition Based Service.

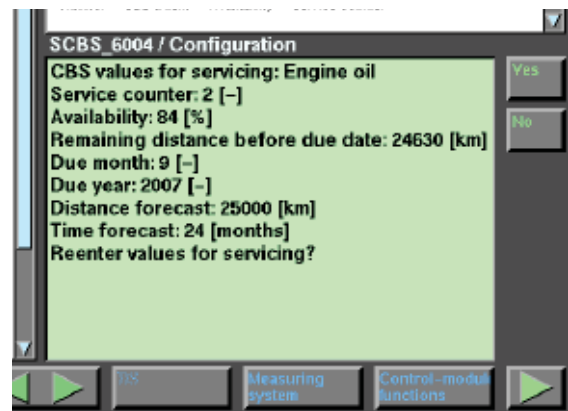


Select the specific item that needs the service interval information corrected.

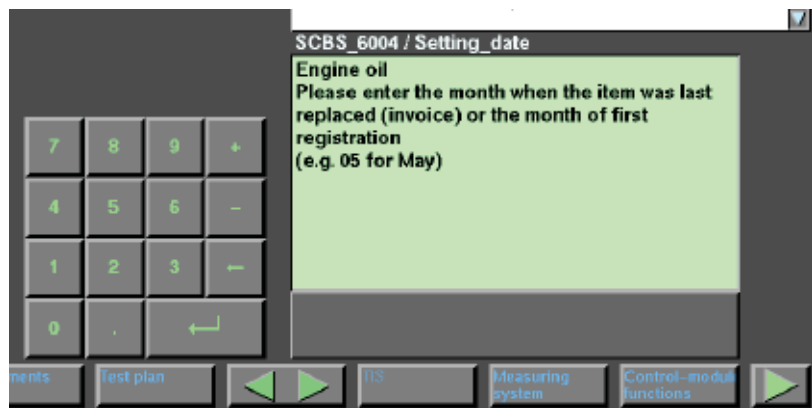
(for this example e “Engine oil” was selected)



Select “Yes” to reenter values for servicing.



Follow the prompts from the green screens to adjust the correction values.



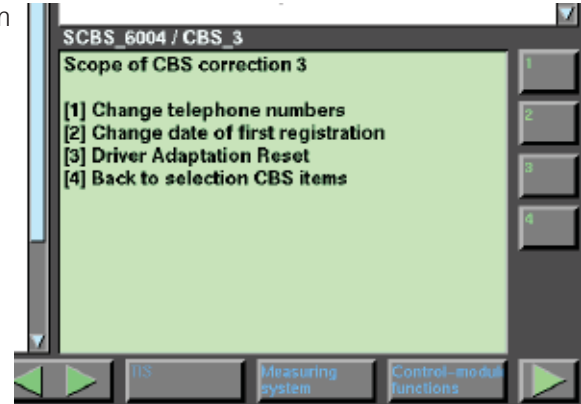
## ■ CBS Handover Inspection

The CBS handover inspection is for the deletion of past data in the vehicle and reconfiguring the vehicle for latest data (updating after a service).

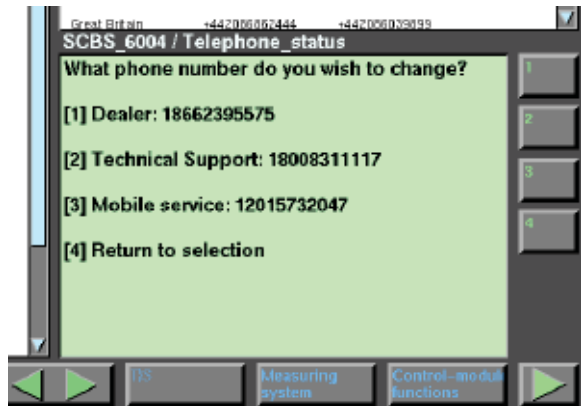
To perform a handover inspection select option three from the CBS correction, vehicle data page.

Option 3 includes:

1. Check status, telephone numbers
2. Enter date of first registration
3. Driver Adaptation reset
4. Back to selection CBS items



It is important that the correct telephone numbers are entered. These numbers are used by the TCU to make service calls for teleservice and for the customer to speak to a customer service representative.



**Note: A list of the telephone numbers that should be entered can be found in SI B84 14 01.**

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## Key Reader

Starting with the E65, BMW opened a new dimension in customer service. Using the Key Reader, Service Reception uses the data stored in the vehicle key to provide the following benefits:

- Accelerate and facilitate service consultation.
- Routine tasks, such as collecting vehicle data, will be minimized.
- After accessing the data stored in the vehicle's key, service and maintenance requirements are determined for the individual vehicle (CBS).
- A customized service maintenance list will be printed out for specific operations (E6x and E9x vehicles no longer utilize a conventional Service Maintenance Checklist).



The Key Reader facilitates and accelerates service reception. As soon as the key is inserted, the vehicle's maintenance data, VIN, and mileage are displayed at the client advisor's desk. It obtains this information by reading the vehicle data from the vehicle keys.

The Service Acceptance Module (SAM) software displays and prints this vehicle data via a Personal Computer with installed Key Reader. The reader accesses the stored vehicle data and the information is displayed on screen depending on the vehicle and model.

### Key - Vehicle Data Holder and Business Card

The Key Reader automatically collects service relevant data from the vehicle key. The data is transmitted from the CAS module to the key or from the EWS module to the key (if not equipped with a CAS).

The key reader works with all current E38, E39, E46, E52, E53, and E85 vehicles with a vehicle key that has a colored BMW logo in the center and all E6x and E9x vehicles.

On early vehicles, the software only provides current vehicle mileage and VIN to the Service Advisor. On newer vehicles, E6x & E9x onward, the software supplies through detailed condition based service information and produces a "Vehicle Inspection Check List" customized to the specific needs of each vehicle.

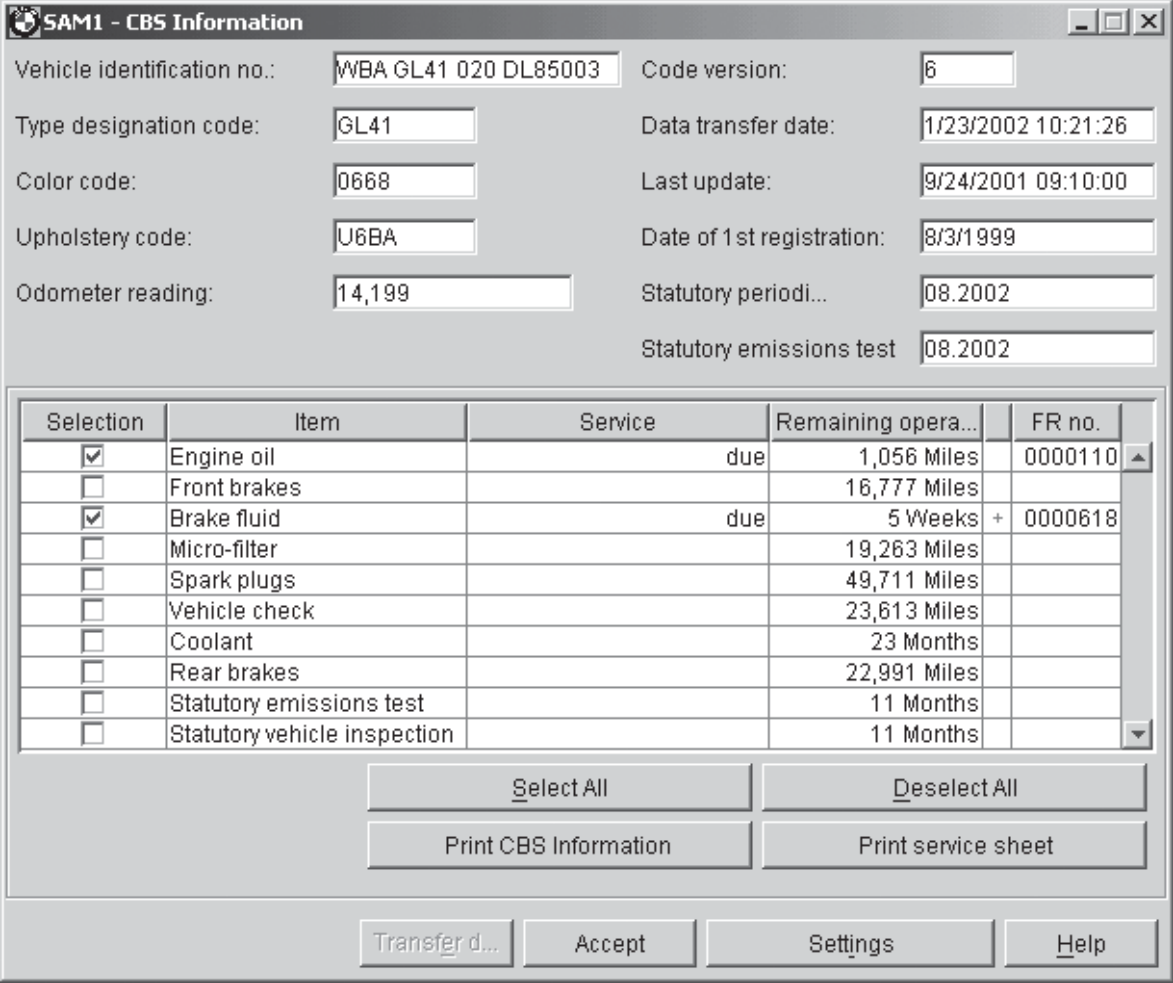
There are circumstances under which the current vehicle data is not stored in the key, for example: the customer has provided the spare key, which has not been used recently.

For this reason, a service function is provided to store data in the key:

- With the driver's door closed, push/hold the central lock switch in the unlock position and push/hold the start/stop button for approximately 5 seconds (without pressing the brake pedal) = Vehicle data is transferred to the spare key.

# Service Acceptance Module Software (SAM)

SAM is the software running at the service advisor’s work station. As soon as the key is inserted into the Key Reader, the software interprets the vehicle data stored in the key and the service and maintenance requirements determined for the individual vehicle (CBS) are displayed on screen (E65 example shown below).



This on screen information provides the service advisor more specific information about the individual vehicle requirements when consulting with the customer. As shown above, the on screen information indicates that the engine oil and brake fluid is due to be changed. In addition, future service and maintenance requirements (based on mileage or time) can be planned.

After accessing the data stored in the vehicle’s key, a customized service maintenance list can be printed out for specific operations (as shown on the next page). The E65 and E66 no longer utilize a conventional Service Maintenance Checklist.

## BMW Group Technical Hotline

The Technical Hotline was established to assist dealer technicians who are faced with difficult to diagnose technical problems. In our efforts to ensure that we provide the ultimate service, please conform to the following before calling the Technical Hotline:

- The technician assigned to the vehicle must have the training directly related to the specific vehicle or system
- All available resources are reviewed, these may include but not limited to: SIBs, TIS, DCS messages, Service Round Table, etc.
- The Shop Foreman / Lead Technician is consulted
- The attached Check Sheet is completely filled out (please photocopy as needed)

If at this point a solution has not been reached, please contact the Technical Hotline through the use of the Product and Measures Management Aftersales (PuMA) interface.

A contact number can be provided in the following cases:

- Abnormal troubleshooting which does not resolve the problem, and the Technical Hotline offers a recommendation to replace a component or a system (very rare).
- All automatic transmission replacements.

More information on PuMA can be obtained via the PuMA section of this book on a separate tab.

**Note: The Quality and Service Engineering Department should only be contacted if you need technical assistance or you are following up on a previous Technical Hotline discussion.**



## Classroom Exercise - Review Questions

1. Name the bulletin numbers which contains information concerning Quality Certification. \_\_\_\_\_
2. Transmission fluid for the CVT should be changed every \_\_\_\_\_
3. At what approximate mileage will the SIA indicator show the first scheduled oil change is due? \_\_\_\_\_
4. During which BMW Inspection is the poly V-belt changed? \_\_\_\_\_
5. Name the four things a technician should do BEFORE calling the Technical Hotline.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
6. What is the factory default setting for Pathway Lighting? \_\_\_\_\_
7. What three steps make up the approved method of documenting repair orders?  
\_\_\_\_\_